

**Southern Methodist University** – The SMU Particle Physics Group sponsored its annual QuarkNet Workshop for local high school physics teachers the week of August 6-10, 2012, an event which it has organized annually since 2001. This year's workshop had 14 teachers, all of whom were previous QuarkNet participants. There were male and female teachers representing Dallas area public and private schools. A number of SMU faculty (S. Dalley, R. Scalise, R. Stroynowski) and staff (R. Guarino, F. Ferrante, S. Melton, C. Carroll) participated.

The main workshop theme was (gravitational wave) interferometry. In the lead up to this year's workshop, QuarkNet teachers were invited in the spring to the 2012 Lightner-Sams dinner and lecture at SMU, given by Prof. Craig Hogan, Fermilab, on the subject of gravitational waves and their detection. At the summer workshop, teachers each successfully built their own simple make-and-take interferometers in the lab. There were a variety of supporting lectures and videos on the Michelson-Morley experiment, general relativity, gravity waves, and gravity wave astronomy. Teachers T. Cannon and E. Restivo were among the presenters. Dale Ingram from the Laser Interferometer Gravitational-wave Observatory (LIGO) joined the workshop via videolink and spent an afternoon describing the facilities and the LIGO-elab which contains seismic data that can be used as a school project resource. At the end of the workshop week, most of the teachers travelled to LIGO in Livingston LA, where they were conducted on a guided tour inside and outside the experiment. They also experienced the many physics demos at the LIGO education center and exchanged ideas with the education center staff.

In addition at the workshop, Prof. R. Stroynowski (SMU Physics), who led the design and construction of the liquid Argon calorimeter in the ATLAS experiment at the LHC, gave a presentation and led a discussion session with the teachers on the recent 5 sigma discovery of a new resonance, that will likely turn out to be the Higgs Boson.

The SMU center now has 6 teachers using quarknet cosmic ray detectors throughout the year and we will add one more teacher this year.

Links to resources: <http://www.physics.smu.edu/scalise/quarknet>

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